Making Decisions: Learning Objectives

Learn how to:

- Use ISM data to make decisions
- Evaluate data
  - Identifying sources of error
  - Quantify error
  - Interpret error
  - Isolate sources of error

Report Documentation Page

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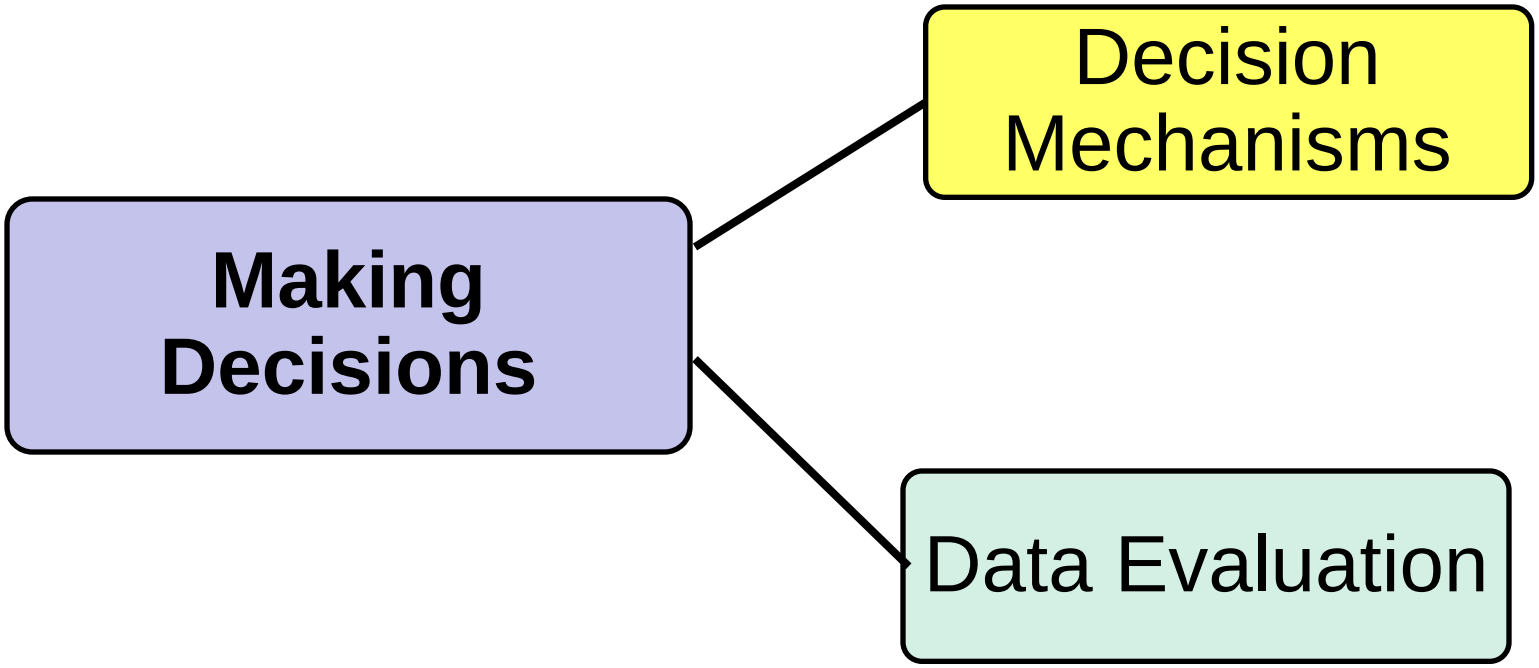
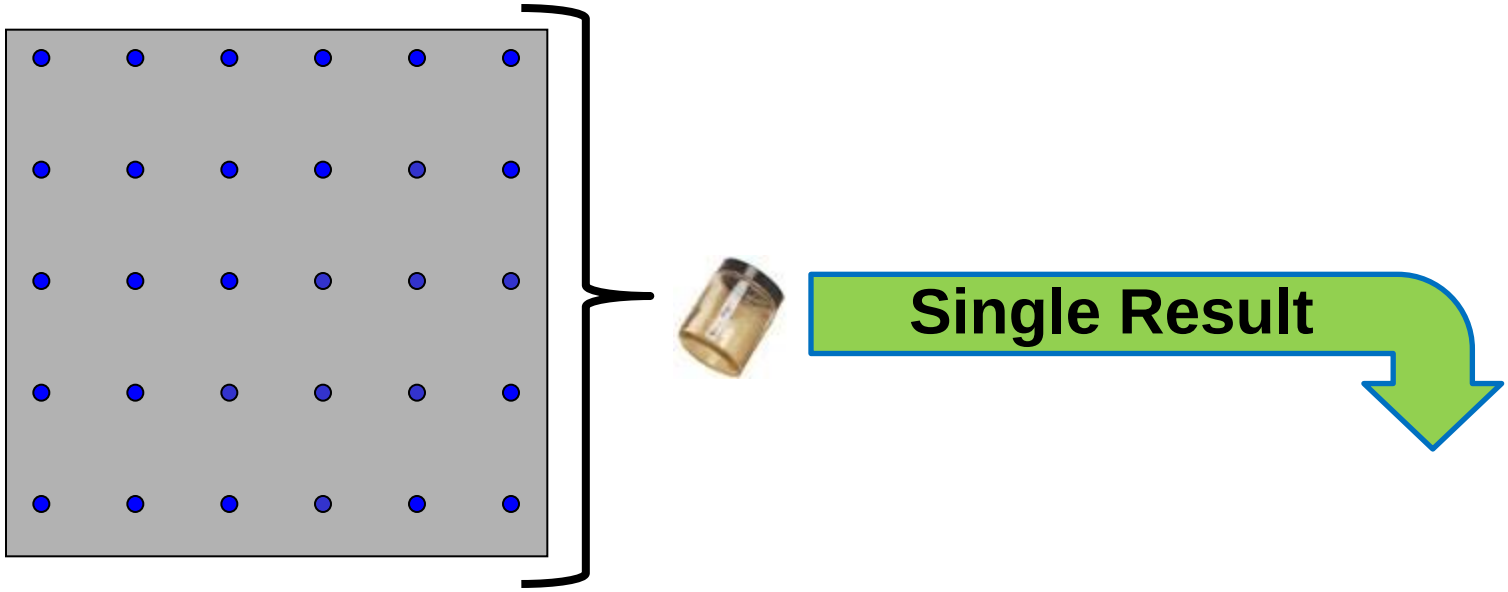
Making Decisions Using ISM Data



Making Decisions

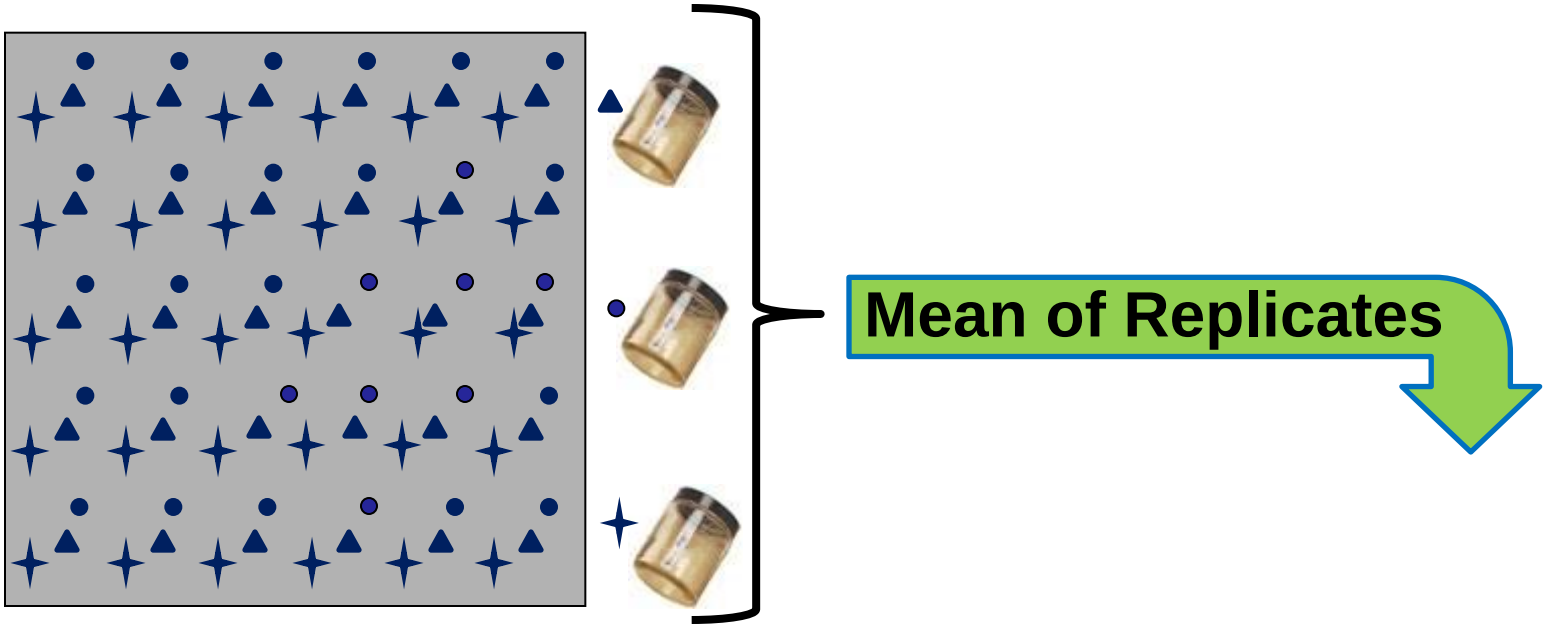
- Decision Mechanism (DM)
  - Structured approach to making decisions
  - Identified and agreed upon during Data Quality Objective (DQO) process
  - 6 common types of DM

DM 1: Compare One ISM Result to Action Level



ITRC, ISM-1, Section 4.2.1 and Section 7.2.1

DM 2: Compare Average ISM Result to Action Level

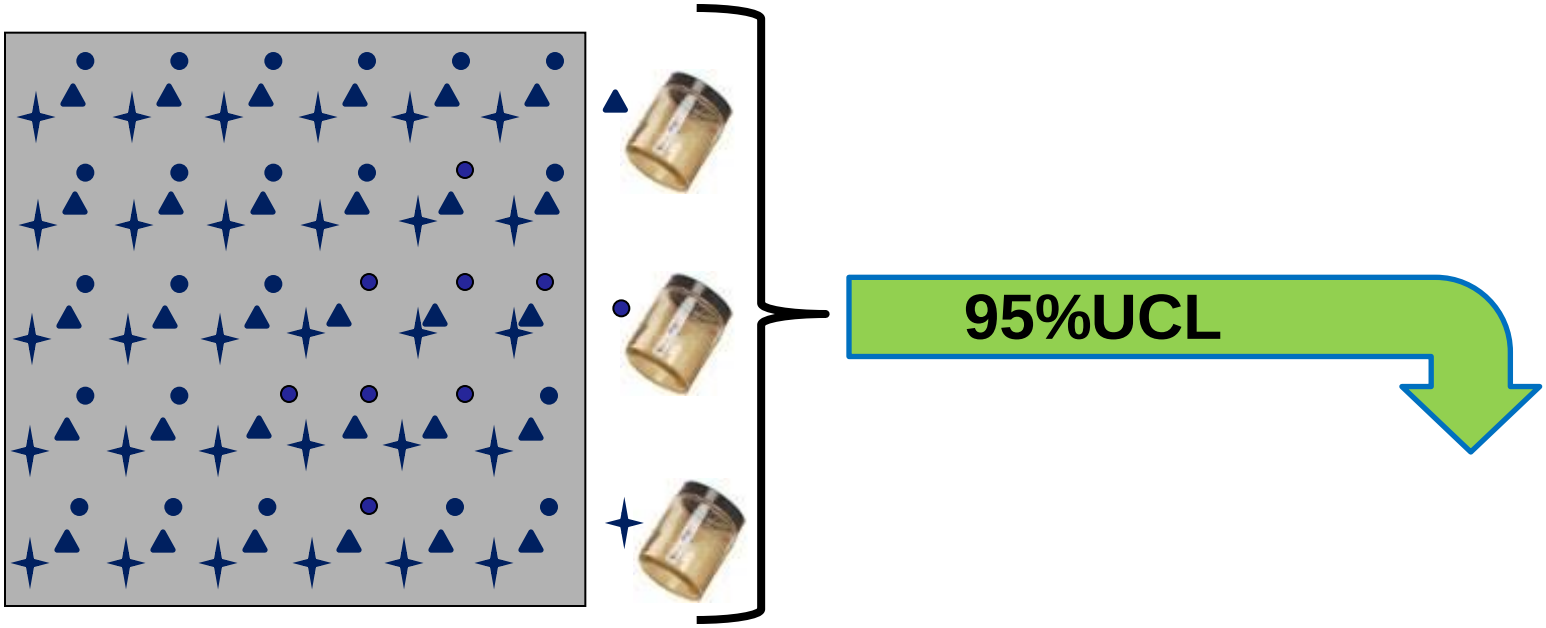


Florida Case Study:
Decision Mechanism (DM) 2

Mean arsenic concentrations (mg/kg)

	Discrete *n* = 30	Incr-30 *n* = 3	Incr-100 *n* = 3
DU 2	4.2	5	5.2
DU 3	7.5	10.5	9.5

DM 3: Calculate 95%UCL then Compare to Action Level or Use for Risk Assessment



ITRC, ISM-1, Section 4.2.2 link to calculator

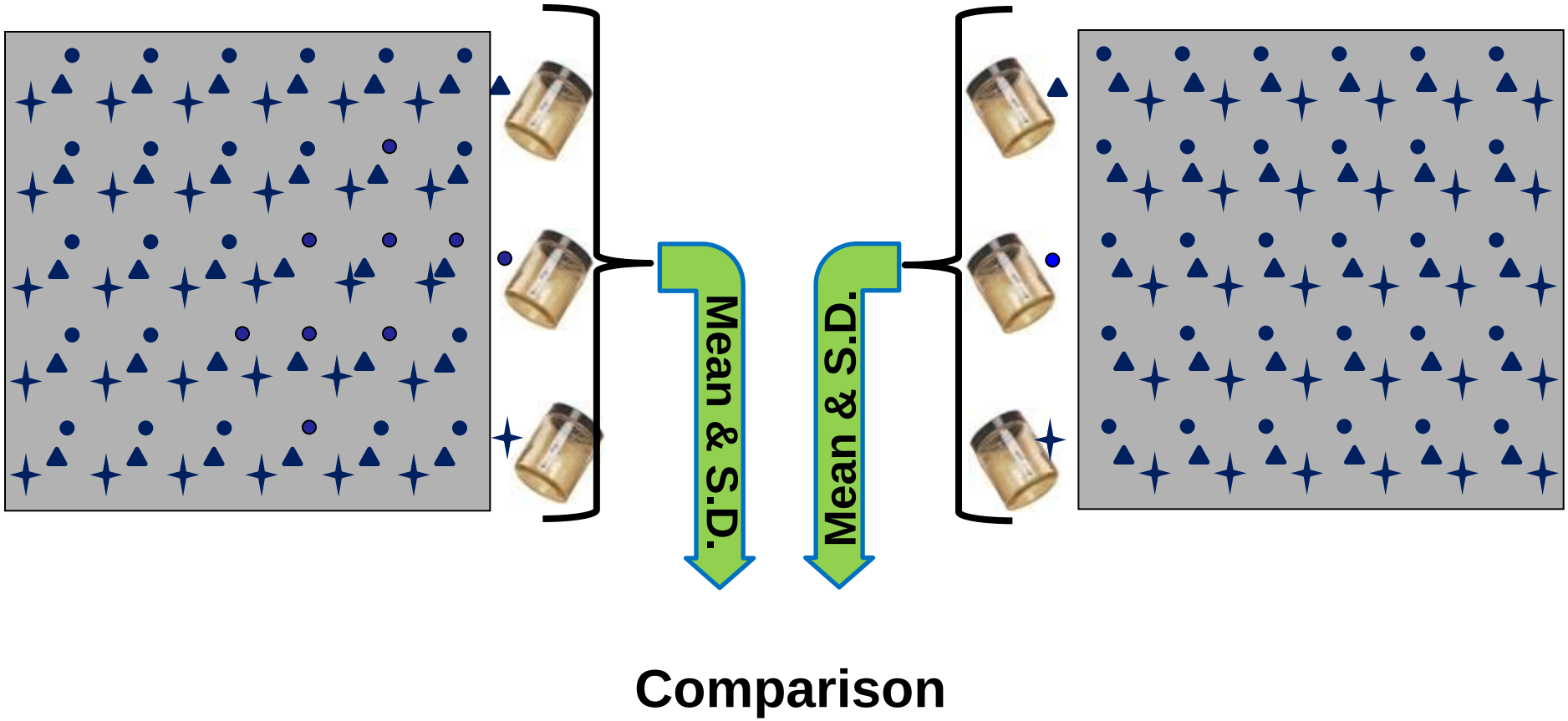
Florida Case Study: Decision Mechanism 3: (DU 1)

Arsenic Data (mg/kg)

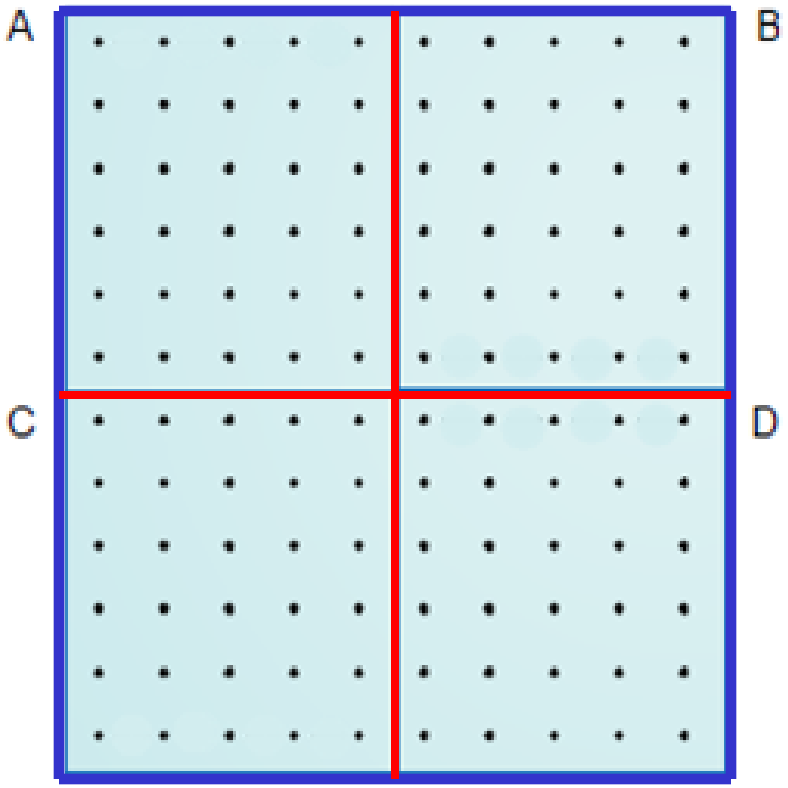
	Discrete n = 10 (mg/kg)	Incr-30 n = 3 (mg/kg)	Incr-100 n = 3 (mg/kg)
Mean	2	1.8	1.7
Std Dev	1.4	0.08	0.03
95UCL	**3.0**	**2.0**	**1.8**

Florida Action Level: 2.1 mg/kg

DM 4: Compare to Background



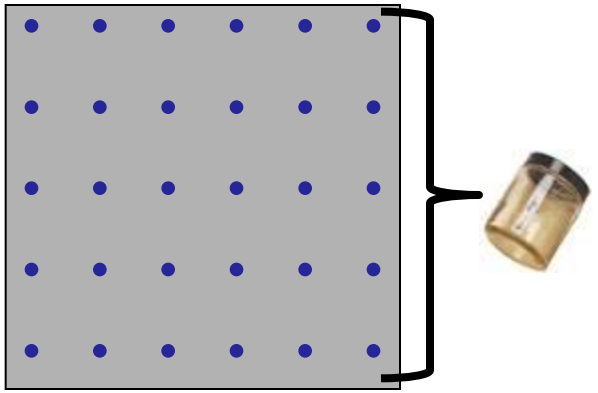
DM 5: Combining Decision Units



DU average
and
Weighted average

Action Level

DM 6: Extrapolation to Unsampled Areas



Sampled Decision Unit

Extrapolate

Action Level

Unsampled Decision Unit

ITRC, ISM-1, Section 4.4.4.2

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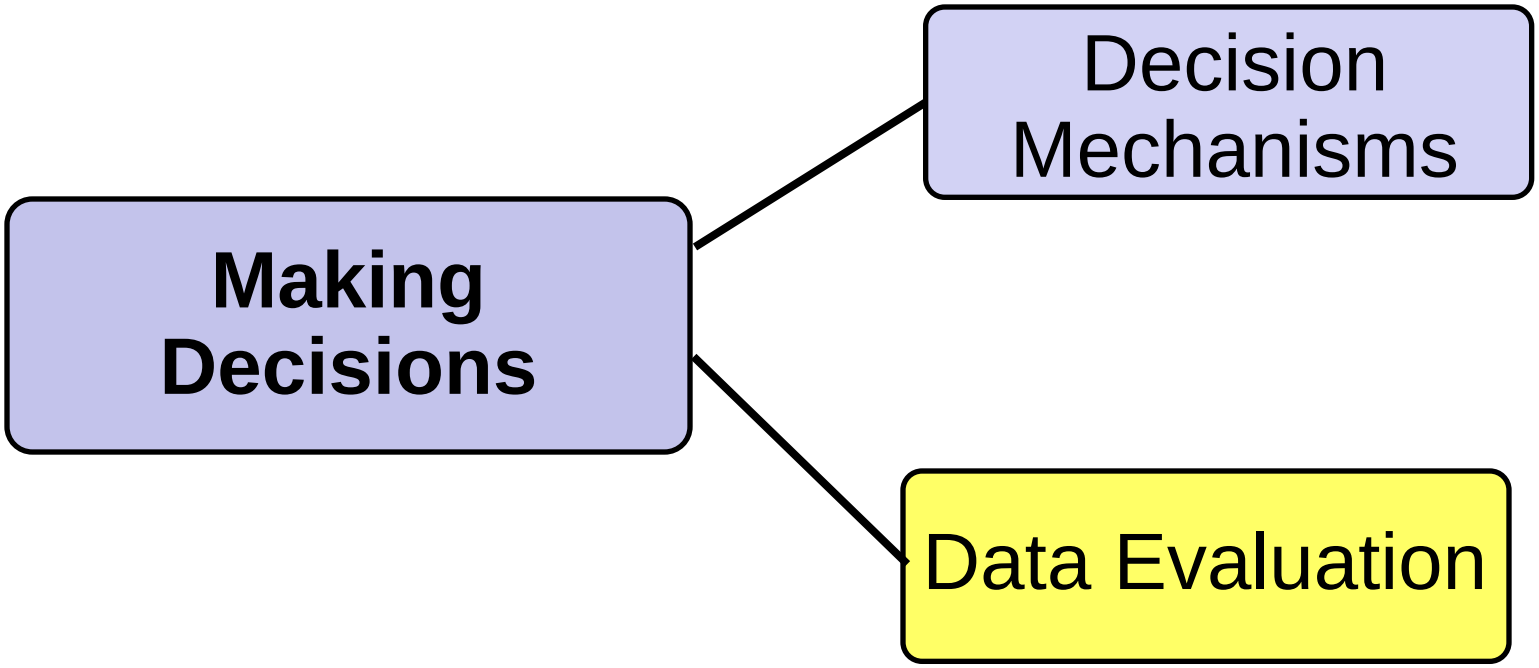
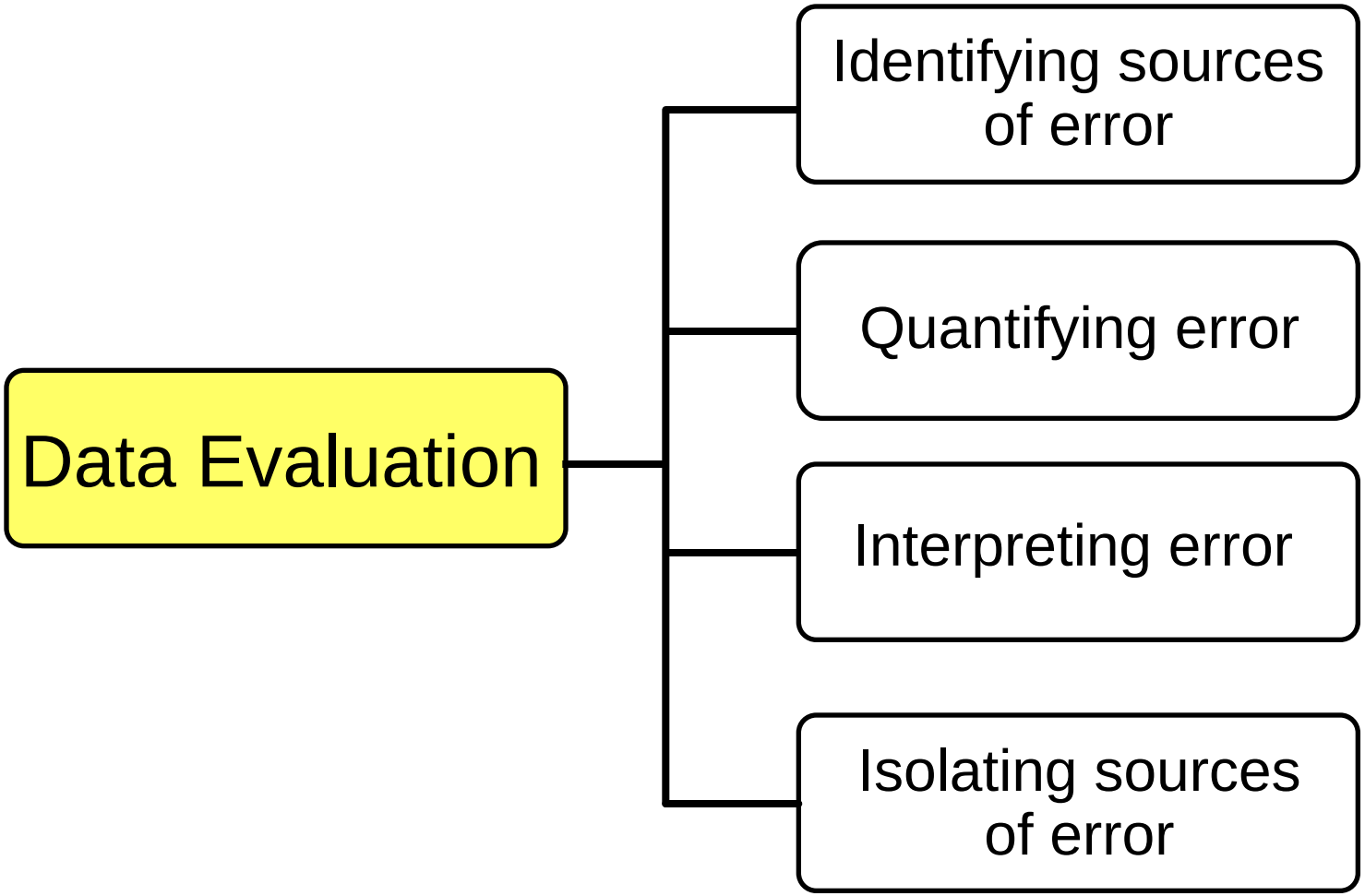


Data Evaluation Components



Identifying Sources of Error

Field

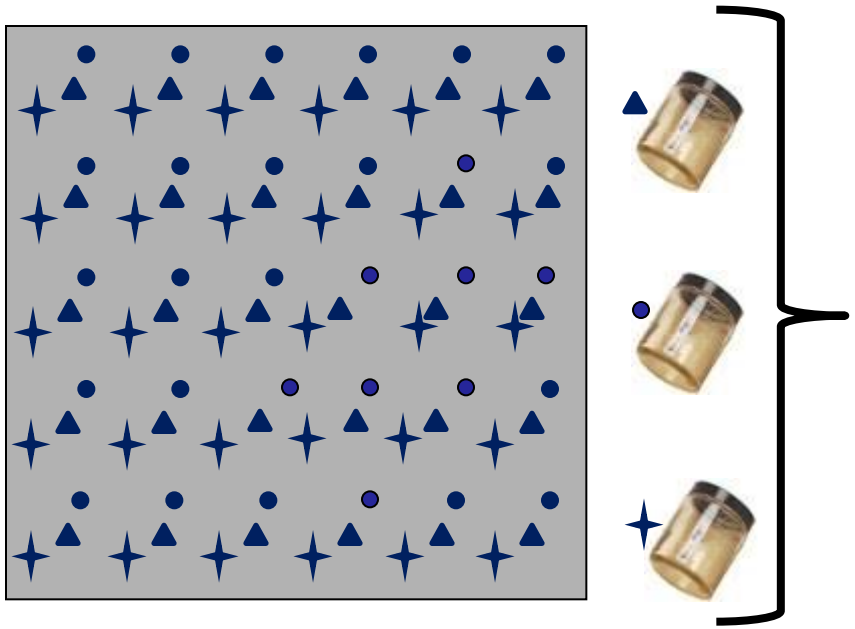
- Number of increments
- Increment collection
- Field processing
- Field splitting
- DU size and shape

Laboratory

- Lab processing
- Subsampling
- Extraction
- Digestion
- Analysis

Quantifying Error

RSD = CV = standard deviation / arithmetic mean

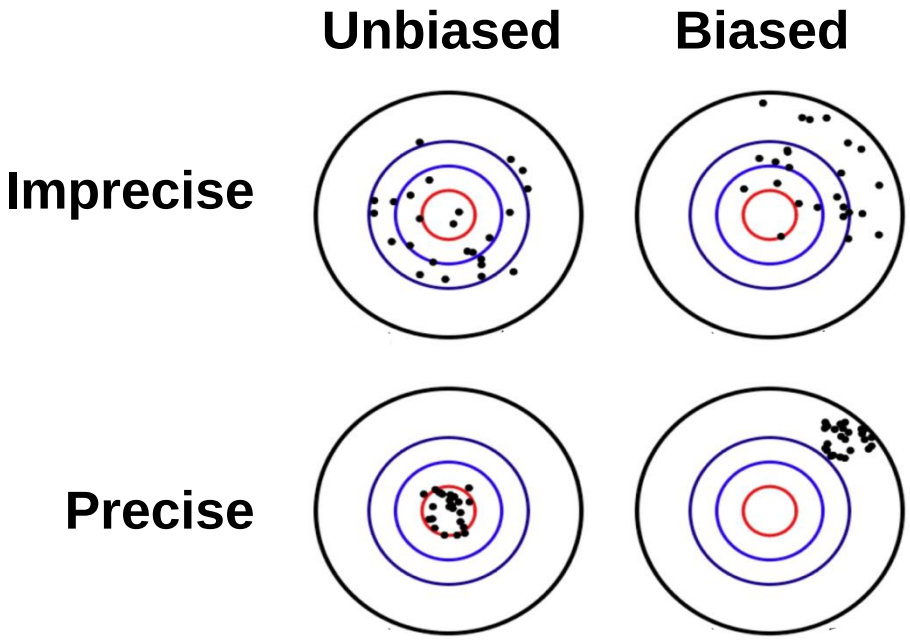


Decision Unit

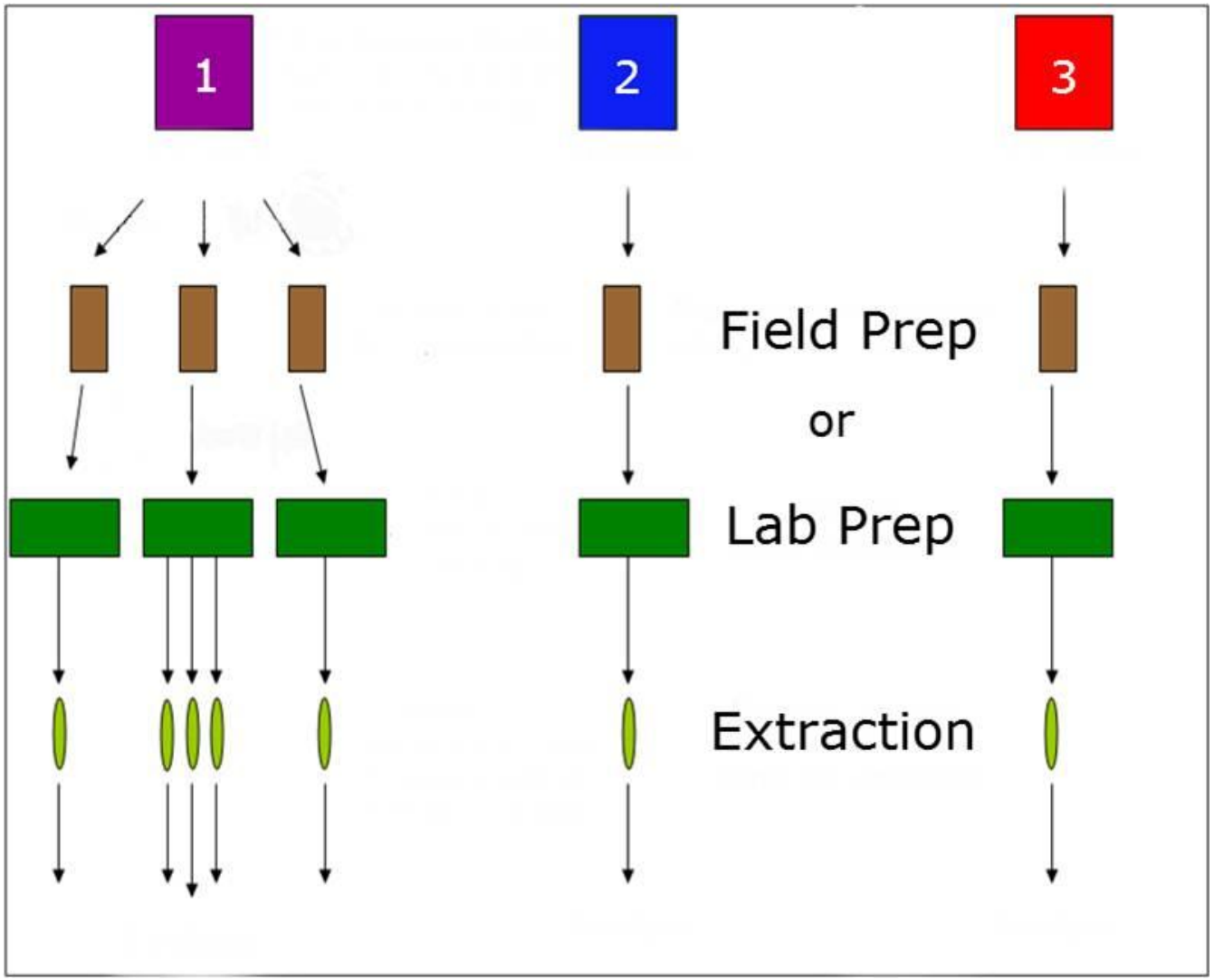
Data includes all sources of error

Interpreting Error

- "Unacceptable" RSD
- Low RSD
- High RSD



Isolating Sources of Error



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